

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
2 October 2003 (02.10.2003)

PCT

(10) International Publication Number
WO 03/080570 A3

- (51) International Patent Classification⁷: **C12N 5/10**, 15/63, G01N 33/53
- (21) International Application Number: PCT/US03/08611
- (22) International Filing Date: 20 March 2003 (20.03.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/365,550 20 March 2002 (20.03.2002) US
- (71) Applicant (for all designated States except US): **TRANS-MOLECULAR, INC.** [US/US]; 3800 Colonnade Parkway, Suite 240, Birmingham, AL 35243 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **GONDA, Matthew, A.** [US/US]; 3800 Colonnade Parkway, Suite 240, Birmingham, AL 35243 (US). **GREENWOOD, John, D.** [US/US]; 3800 Colonnade Parkway, Suite 240, Birmingham, AL 35243 (US).
- (74) Agents: **SMYTH, Robert, J.** et al.; Morgan, Lewis & Bockius LLP, 1111 Pennsylvania Avenue, NW, Washington, DC 20004 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report:
27 November 2003
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: RECOMBINANT EXPRESSION VECTORS FOR FUNCTIONAL $Na_v1.9$ SODIUM CHANNELS

(57) Abstract: The present invention is drawn to the stable cloning and expression of $Na_v1.9$ sodium channel at the mRNA and protein levels, production of sodium channel currents characteristic of native currents in dorsal root ganglion neurons and to cell lines transiently or stably expressing recombinant $Na_v1.9$ sodium channel.

WO 03/080570 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/08611

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12N 5/10, 15/63; G01N 33/53

US CL : 435/7.2, 320.1, 325

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/7.2, 320.1, 325

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 771 103 A1 (DIETRICH et al.) 19 November 1998 (19.11.1998), see pages 17-18, 21-24, and 30-33.	1-33
X	WO 99/38889 A2 (YALE UNIVERSITY) 05 August 1999 (05.08.1999), see pages 10-22.	1-33

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

21 September 2003 (21.09.2003)

Date of mailing of the international search report

10 OCT 2003

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

Michael Pak

Telephone No. 703-308-1235

INTERNATIONAL SEARCH REPORT

PCT/US03/08611

Continuation of B. FIELDS SEARCHED Item 3:
BRS, GENESEQ, PIR, SWISSPROT, SPTREMBL

search terms: sodium channel, Nav1.9